

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently Amended): A process for depositing, on a substrate, a coating based on semiconductor materials based on metal oxides, ~~especially titanium oxide, which~~ are capable, under the effect of radiation of suitable wavelength, of initiating radical reactions causing the oxidation of organic substances so as to confer photocatalytic properties on said coating, ~~characterized in that the process comprising:~~

depositing the coating with photocatalytic properties is deposited by chemical vapor deposition,

~~, especially from a gas mixture comprising at least one organometallic precursor and/or a metal halide of said metal oxide, the deposition being enhanced by a plasma source.~~

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Claim 2 (Currently Amended): The process as claimed in claim 1, ~~characterized in that wherein~~ at least one carrier gas or a mixture of carrier gases, ~~chosen from is selected from the group consisting of~~ air, nitrogen, helium, and argon,

and the carrier gas or the mixture of carrier gases is injected parallel to the mixture containing the precursor.

Claim 3 (Currently Amended): The process as claimed in ~~either of claims 1 and 2,~~ ~~characterized in that claim 1, wherein~~ an oxidizing agent or a mixture of oxidizing agents is incorporated into the gas mixture.

Claim 4 (Currently Amended): The process as claimed in ~~either of claims 1 and 2,~~
~~characterized in that~~ claim 1, wherein a reducing agent or a mixture of reducing agents is
incorporated into the gas mixture.

Claim 5 (Currently Amended): The process as claimed in ~~one of claims 1 to 4,~~
~~characterized in that~~ claim 1, wherein the reaction and the deposition phase takes place at
reduced pressure.

Claim 6 (Currently Amended): The process as claimed in claim 5, ~~characterized in~~
~~that~~ wherein the reaction and the deposition phase takes place at atmospheric pressure.

Claim 7 (Currently Amended): The process as claimed in ~~one of claims 1 to 6,~~
~~characterized in that~~ claim 1, wherein at least one sublayer is deposited, prior to the
deposition of the coating with photocatalytic properties, making it possible to impart another
functionality to said coating with photocatalytic properties and/or to reinforce said properties
of said coating.

Claim 8 (Currently Amended): The process as claimed in ~~one of claims 1 to 7,~~
~~characterized in that~~ ~~incorporated~~ claim 1, which incorporates into the gas mixture
comprising at least the organometallic precursor and/or a metal halide of said metal oxide that
is at least one other type of mineral material, ~~especially in the form of an amorphous or~~
~~partially crystallized oxide, for example a silicon oxide (or mixture of oxides), titanium~~
~~oxide, tin oxide, zirconium oxide, aluminum oxide, vanadium oxide, antimony oxide, zinc~~
~~oxide, nickel oxide or cobalt oxide, optionally in mixed or doped form.~~

Claim 9 (Currently Amended): The process as claimed in ~~one of claims 1 to 8,~~
~~characterized in that~~ claim 1, wherein the coating with photocatalytic properties is deposited
on the substrate within the actual plasma discharge.

Claim 10 (Currently Amended): The process as claimed in ~~one of claims 1 to 8,~~
~~characterized in that~~ claim 1, wherein the coating with photocatalytic properties is deposited
on the substrate outside the plasma discharge.

Claim 11 (Currently Amended): A substrate based on glass, ceramic, glass-ceramic
or plastic, provided on at least part of at least one of its faces with a coating with
photocatalytic properties, comprising:

at least partially crystallized titanium oxide, obtained by implementing the process as
claimed in ~~any one of the preceding claims~~ claim 1, characterized in that wherein the
crystallized titanium oxide is in anatase form, in rutile form, in brookite form, or in the form
of a mixture of anatase, rutile and brookite.

Claim 12 (Currently Amended): The substrate as claimed in claim 11, ~~characterized~~
~~in that~~ wherein the crystallized titanium oxide is in the form of crystallites with a mean size
of between 0.5 and 60 nm, ~~preferably 1 to 50 nm.~~

Claim 13 (Currently Amended): The substrate as claimed in ~~either of claims 11 and~~
~~12, characterized in that~~ claim 11, wherein the coating also includes a mineral material,
~~especially in the form of an amorphous or partially crystallized oxide or mixture of oxides, of~~
~~the silicon oxide, titanium oxide, tin oxide, zirconium oxide, aluminum oxide, vanadium~~
~~oxide, antimony oxide, zinc oxide, tungsten oxide, cobalt oxide or nickel oxide type.~~

Claim 14 (Currently Amended): The substrate as claimed in ~~either of claims 11 and 12, characterized in that~~ claim 11, wherein the coating includes additives capable of extending the ~~photocatalytic~~ photocatalytic effect due to titanium oxide, ~~especially by increasing the absorption band of the coating and/or by increasing the number of charge carriers by doping the crystal lattice of the oxide or by surface doping of the coating and/or by increasing the efficiency and rate of the photocatalytic reactions, or by preventing the recombination of charge carriers in the material, by covering at least part of the coating with a catalyst.~~

Claim 15 (Currently Amended): The substrate as claimed in claim 14, ~~characterized in that~~ wherein the crystal lattice of the titanium oxide is doped, ~~especially by at least one of the metallic or nonmetallic elements.~~

Claim 16 (Currently Amended): The substrate as claimed in ~~one of claims 11 to 15, characterized in that~~ claim 11, wherein the thickness of the coating is between 5 nm and 1 micron, ~~preferably 5 to 100 nm.~~

Claim 17 (Currently Amended): The substrate as claimed in ~~one of claims 11 to 16, characterized in that~~ claim 11, wherein the photocatalytic activity of the coating is at least $5 \times 10^{-3} \text{ cm}^{-1} \text{ min}^{-1}$ measured by means of the TAS test.

Claim 18 (Currently Amended): The substrate as claimed in ~~one of claims 11 to 17, characterized in that~~ claim 11, wherein the rms roughness of the photocatalytic coating is between 2 and 20 nm, ~~especially between 5 and 20 nm.~~

Claim 19 (Currently Amended): The substrate as claimed in ~~one of claims 11 to 18,~~
~~characterized in that~~ claim 11, wherein the light reflection of the photocatalytic coating is less
than 30%, ~~preferably less than or equal to 20%,~~ with a neutral color.

Claim 20 (Currently Amended): The substrate as claimed in ~~one of claims 11 to 18,~~
~~characterized in that~~ claim 11, wherein the absorption of the photocatalytic coating is less
than 10%, ~~preferably less than 5 %.~~

Claim 21 (Currently Amended): The substrate as claimed in ~~one of claims 11 to 19,~~
~~characterized in that~~ claim 11, wherein at least one thin film having an antistatic, thermal or
optical function, or forming a barrier to the migration of alkali metals coming from the
substrate, is placed beneath the coating with photocatalytic properties.

Claim 22 (Currently Amended): The substrate as claimed in claim 21, ~~characterized~~
~~in that~~ wherein the thin film having an antistatic function, possibly with controlled
polarization, and/or having a thermal and/or optical function is based on a conductive
material of the metal type or of the doped metal oxide type, ~~such as ITO, Sb:SnO₂, F:SnO₂,
In:ZnO, F:ZnO, Al:ZnO, or Sn:ZnO, or a metal oxide substoichiometric in oxygen, such as
SnO_{2-x} or ZnO_{2-x}, where $x < 2$.~~

Claim 23 (Currently Amended): The substrate as claimed in claim 21, ~~characterized~~
~~in that~~ wherein the thin film having an optical function is based on an oxide or a mixture of
oxides, the refractive index of which is intermediate between that of the coating and that of
the substrate, especially that (or those) chosen from the following oxides: Al₂O₃, SnO₂, and

In₂O₃, or based on silicon oxycarbide or silicon oxynitride, or mixed oxides based on a mixture of a material of high refractive index with a material of low refractive index.

Claim 24 (Currently Amended): The substrate as claimed in claim 21, ~~characterized in that~~ wherein the thin film having an alkali-metal barrier function is based on a silicon oxide, nitride, oxynitride or oxycarbide, F:Al₂O₃, aluminum nitride, SnO₂ or silicon nitride.

Claim 25 (Currently Amended): The substrate as claimed in ~~one of claims 11 to 24,~~ characterized in that claim 11, wherein the substrate is a transparent, flat, or curved, ~~substrate.~~

Claim 26 (Currently Amended): The substrate as claimed in ~~one of claims 11 to 24,~~ characterized in that claim 11, wherein the substrate is a glass substrate.

Claim 27 (Currently Amended): The substrate as claimed in ~~one of claims 11 to 24,~~ characterized in that claim 11, wherein the substrate is a substrate based on a polymer, especially PMMA, polycarbonate, or PEN.

Claim 28 (Currently Amended): An “antisoiling and/or antifogging”, monolithic, multiple ~~(double)~~ or laminated glazing assembly; the assembly comprising:

~~incorporating~~ a substrate as claimed in ~~any one of claims 11 to 27~~ claim 11,

for the manufacture of glazing having properties of that is “self-cleaning”, antifogging and/or antisoiling, as regards organic and/or mineral soiling, ~~especially for~~ building windows of the double-glazing type, vehicle windows of the windshield, rear window or side-window type for automobiles, trains and aircraft, or utilitarian glazing, ~~such as including~~ glass for an aquarium, for shop windows, for a greenhouse, for interior furnishing, for urban furniture, or

mirrors, television screens, or glazing with electrically controlled variable absorption, or photovoltaic cells.

Claim 29 (New): The process of claim 1, wherein the metal oxide is titanium oxide.

Claim 30 (New): The process of claim 1, wherein the chemical vapor deposition includes utilizing a gas mixture that comprises at least one organometallic precursor and/or a metal halide of said metal oxide, the deposition being enhanced by a plasma source.

Claim 31 (New): A method for manufacturing a laminated assembly, the method comprising:

incorporating a substrate as claimed in claim 11.